Abstracts

GaAs MESFET Small-Signal X-Band Amplifiers

N.A. Slaymaker, R.A. Soares and J.A. Turner. "GaAs MESFET Small-Signal X-Band Amplifiers." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 329-337.

This paper describes several techniques used to design and realize small-signal amplifiers at X band using Plessey 1-µm gate-length GaAs MESFET's. Noise figures of 3 dB or better at 8 GHz with associated gains of 5.5 dB have been produced. The mounting of GaAs MESFET's on 25-mil-thick alumina substrates and their S-parameter characterization is described. Owing to some uncertainties in these measurements, four parallel approaches were used to realize amplifiers. The "designed," "semidesigned," "semituned," and "tuned" methods are described and results are presented for each case. A semidesigned single-stage amplifier has a gain of 8 ± 0.6 dB from 8.5 to 9.5 GHz and a minimum noise figure of 4.4 dB. A semituned amplifier can be tuned from 8 to 10 GHz with VSWR's less than 2:1 over any 600-MHz bandwidth in that range.

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